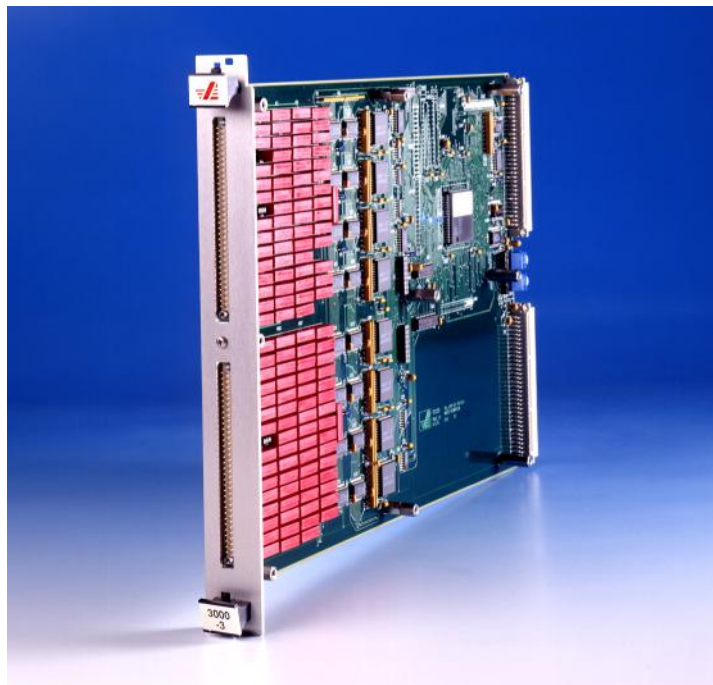


Model 3000-03

4(1x30) Multiplexer

90400620



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Regulatory compliance information

This product complies with the essential requirements of the following applicable European Directives, and carries the CE mark accordingly.

89/336/EEC and 73/23/EEC

EN61010-1 (1993)

EN61326-1 (1997)

Manufacturer's Name:

Giga-tronics, Incorporated

EMC Directive and Low Voltage Directive

Electrical Safety

EMC – Emissions and Immunity

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U.S.A.

Type of Equipment:

Switching Module

Model Series Number

3000-03

Declaration of Conformity on file. Contact Giga-tronics at the following;

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TPCI Number	TPCI Issue Date	Date Entered	Comments

Revision History			
Revision	Description of Change	Chg Order #	Approved By
A	Initial Release		
B	Updated		
C	Reformatted 2/12		RCW

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Chapter 1 Introduction

1.1 Safety and Manual Conventions

This manual contains conventions regarding safety and equipment usage as described below.

1.1.1 Product Reference

Throughout this manual, the term “Common Core Switching Platform, Series 8800” refers to all models of within the series, unless otherwise specified.

1.1.2 Personal Safety Alert



WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.

1.1.3 Equipment Safety Alert



CAUTION: Indicates a situation which can damage or adversely affect the product or associated equipment.

1.1.4 Notes

Notes are denoted and used as follows:

NOTE: Highlights or amplifies an essential operating or maintenance procedure, practice, condition or statement.

1.1.5 Electrical Safety Precautions

Any servicing instructions are for use by service-trained personnel only. To avoid personal injury, do not perform any service unless you are qualified to do so.

For continued protections against fire hazard, replace the AC line fuse only with a fuse of the same current rating and type. Do not use repaired fuses or short circuited fuse holders.

Chapter 2 Configuration Table

PL90400620-001 Quad 1x30

ASSY90400620-001

PL85005070-006

ASSY85005070-006

SCH85005070-006

PL90400620-100 Single 1x120

ASSY90400620-100

PL85004200

ASSY85004200

SCH85004200

Chapter 3 Functional Description

3.1 Introduction

This manual provides the necessary information for the operation and maintenance of the Model 3000-03 General Purpose VXI Switch Module.

3.2 General Description

This module contains switch trees which can be jumper configured for a 120x1, or Program configured for a dual 60x1, or quad 30x1 switch trees. Each relay is individually controlled, any and all relays can be closed. The switch trees are specially designed to support ATE testing and they are designed to support shielded measurements such as guarded DMM measurements. This module is ideal for supporting Digital Multi-meter switching requirements. The Interface and mechanical construction meets the specification of the VXIbus System Specification Rev: 1.2 and 1.3.

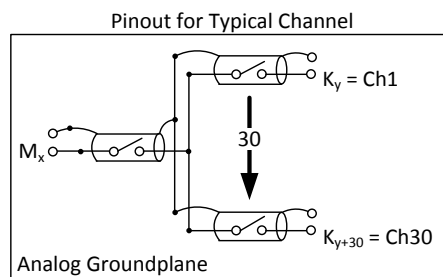
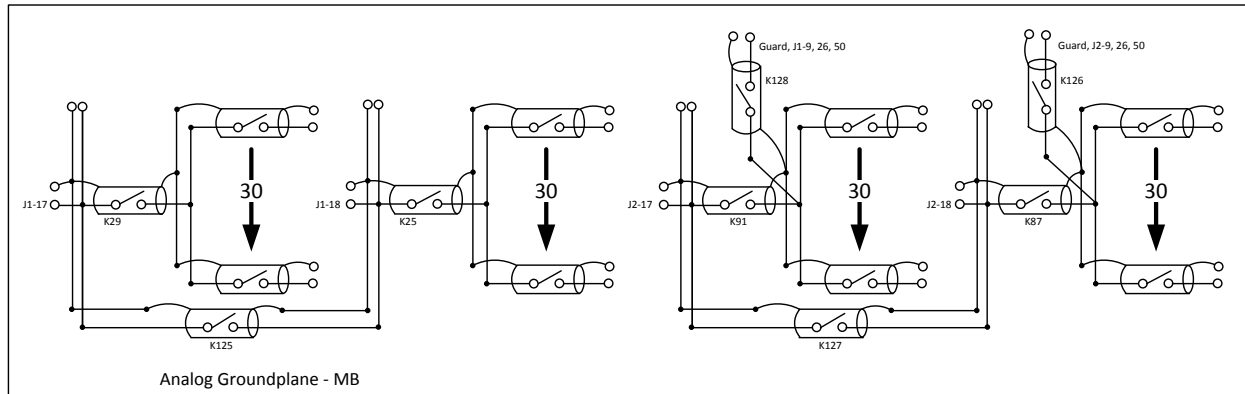
Electrical: Maximum

Switching Voltage (DC/Peak AC, Resistive)	200 Volts
Switching Current (DC/Peak AC, Resistive)	0.5 Amps
Carry Current (DC/Peak AC, Resistive)	1.0 Amps
Contact Power Rating (DC/Peak AC, Resistive)	10 Watts
Life Expectancy @ Signal <<1,0V, 0.010A)	500,000,000
Contact Resistance:	0.400 ohms

ASCOR's Model 3000-3 single slot, plug-and-play VXI Switching Module is a configurable, high density, virtually noise free Multiplexer. Ideal for DMM applications, general scanning, or wherever a large number of channels with high signal isolation are required.

- Channels are individually controlled for maximum versatility, and all relays are individually shielded and grounded for absolute minimal crosstalk and signal interference.
- **Configurable**
 - 1(1X30) 4-wire
 - 2(1x6) 2-wire
 - 1(1x120) 1-wire

Chapter 4 Block Diagram

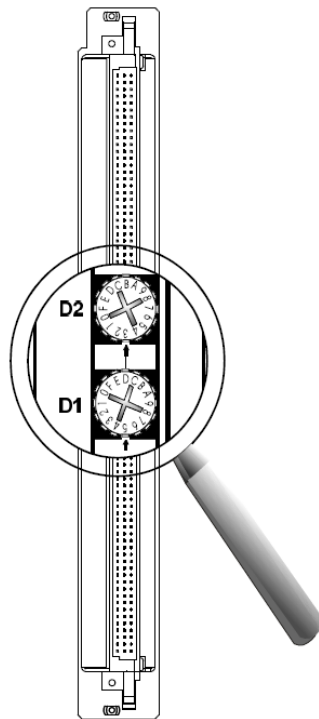


Controls and Indicators

The following controls and indicators are provided to select and display the functions of the ASCOR 3000-03 Module's operating environment.

4.1 VXI LOGICAL ADDRESS

The Logical Address Switch is dual circular switches, D1 and D2 which are located at the rear of the module. The address can be set to any value between 1 and 255 (decimal) or 1 and FF (hexadecimal), (address 0 is reserved for the resource manager). However, the Module fully supports Dynamic Configuration as defined in **Section F of the VXI specification**, address 255 (FF) should be selected only if the Resource Manager also supports Dynamic Configuration.



4.2 LEDs

The following LEDs are visible at the Module's front panel to indicate the status of the module's operation:

4.2.1 "BUS" LED

This green color LED is normally off and will flash on when the module is addressed by the system.

4.2.2 "PWR" LED

This red color LED is normally on when the Module is Powered up.

Chapter 5 Internal Settings

The following items are inside the module and can be reached by removing the side cover.

5.1 FUSE

The ASCOR VXI 3000-03 uses a 10 Amp fuse in the +5 Volt line and is located on the Mother Board (MB) assembly.

5.2 VXI_{bus} INTERRUPT LEVEL SELECTION

The VXIbus interrupt level is set with three bits in the “3Eh” register.

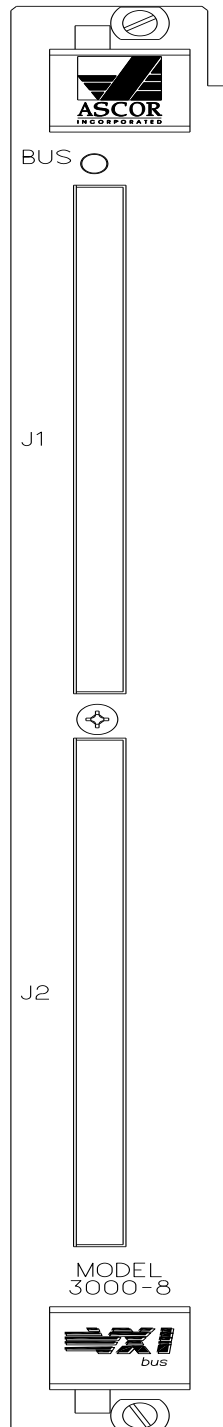
See the section on “A16 ADDRESS SPACE REGISTER DESCRIPTION”.

The interrupt level is factory set to “no interrupt”.

Chapter 6 Specifications

Relay Type :	COTO : 9002-05 (ASCOR p/n 50100060)
Contact Ratings :	Switching Current (MAX) = 0.5 A Carrying Current (MAX) = 1.0 A
(DC / PEAK AC, RESISTIVE)	Switching Voltage (MAX) = 200 V Switching Power (MAX) = 10 W
Initial Resistance :	< 0.20 Ohms
Operational Life :	500,000,000 Cycles
Pick Time :	< 1.0 ms
Release time :	< 0.5 ms
VXI Compatibility :	Fully compatible with VXI Spec REV. 1.0
VXI Device Type :	VXI register based with ASCOR driver.
VXI Card Size :	C size, one slot wide.
Power Requirements :	+5 V @ 3.87 A (MAX)
Temperature :	0°C to +50°C, operating -40°C to +85°C, storage
Humidity	< 95% R.H., non-condensing, 0°C to +30°C. < 75% R.H., non-condensing, +31°C to +40°C < 45% R.H., non-condensing, +41°C to +50°C
VXI Bus Radiated Emissions :	Complies with VXIbus Specification
VXI Bus Conducted Emissions :	Complies with VXIbus Specification.
Dimensions :	VXI C size ; 10.3in x 13.8in x 1.2in
Weight :	3 lbs.

Chapter 7 Front Panel Connectors



7.1 J1 - Front Panel Connector Pins

30 X 1 MATRIX - M1				
PIN	SIGNAL		PIN	SIGNAL
66	K4		33	K3
65	K2		32	K1
64	K8		31	K7
63	K6		30	K5
62	K12		29	K11
61	K10		28	K9
60	K16		27	K15
59	K14		26	GUARD
58	K20		25	K19
57	K18		24	K13
56	K24		23	K23
55	K22		22	K17
54	K28		21	K27
53	K26		20	K21
52	K32		19	K31
51	K30		18	M1 OUTPUT

30 X 1 MATRIX - M2				
PIN	SIGNAL		PIN	SIGNAL
50	GUARD		17	M2 OUTPUT
49	K33		16	K34
48	K35		15	K36
47	K37		14	K38
46	K39		13	K40
45	K41		12	K42
44	K43		11	K44
43	K45		10	K46
42	K47		9	GUARD
41	K48		8	K49
40	K50		7	K51
39	K52		6	K53
38	K54		5	K55
37	K56		4	K57
36	K58		3	K59
35	K60		2	K61
34	K62		1	CHASSIS

7.2 J2 - Front Panel Connector Pins

30 X 1 MATRIX - M3				
PIN	SIGNAL		PIN	SIGNAL
66	K66		33	K65
65	K64		32	K63
64	K70		31	K69
63	K68		30	K67
62	K74		29	K73
61	K72		28	K71
60	K78		27	K77
59	K76		26	GUARD
58	K82		25	K81
57	K80		24	K75
56	K86		23	K85
55	K84		22	K79
54	K90		21	K89
53	K88		20	K83
52	K94		19	K93
51	K92		18	M3 OUTPUT

30 X 1 MATRIX - M4				
PIN	SIGNAL		PIN	SIGNAL
50	GUARD		17	M4 OUTPUT
49	K95		16	K96
48	K97		15	K98
47	K99		14	K100
46	K101		13	K102
45	K103		12	K104
44	K105		11	K106
43	K107		10	K108
42	K109		9	GUARD
41	K110		8	K111
40	K112		7	K113
39	K114		6	K115
38	K116		5	K117
37	K118		4	K119
36	K120		3	K121
35	K122		2	K123
34	K124		1	CHASSIS

Chapter 8 Register Map

8.1 Introduction

The model 3000-3 is a VXI compatible module switch which provides general purpose switching for selecting signals to be measured by a Digital Voltmeter (DMM). This module was designed with special shielding for high quality signal switching and low noise. This module is ideal for general purpose scanners and other switching applications. Each switch is coaxially shielded to a isolated ground plane which is designated as 'guard'. The guard is provided on the front panel connectors.

The main circuit board assembly contains the VXI interface and the basic dual 60x1 or quad 30x1 switch trees.

8.2 Programming

The basic module is a register based VXI module. It is a register based DC device. The DC stands for Dynamic Configuration, where the Resource Manager software running on the slot-0 controller/computer determines the A16 and A24 address space (refer to the VXI System Specifications). A library cell is made SC (Static Configuration) devices by changing the address switches from FFh to a value in the range 01h-FEh. Each card in the VXI system must have its own A16 address.

Register Map (90400520)

The following register map shows the signal name and register assignments for the switch tree. The register maps are for each fixed and programmable type.

ASCOR PN: 90400520 (Fixed)

Description: VXI DMM Switch C-size, 1 slot, Register-based, 60 2-wire or 30 4-wire capability.

A16 Registers

Offset value 00h

CFB5h	C = Register Based, A16/A24 Module FB5 = VXI Manufacturer ID, ASCOR 02h
7F16h	7 = A24 space requirement, 64K of Required Memory F16 = Model Number for this module 04h
FFFCh	Bit 0, reset, is supported. Write
FFFDh	to clear all relay registers and then write
FFFCh	to bring the module back to normal operational mode.

06h (assigned by Resource Manager)

Control Bit 3Eh

- 0 Low true output enable to the coil driver IC's.
- 1 When low enables read back of coil state
When high enables read back of data registers
- 2 High true EEPROM write enable
- 3-15 Don't Care

A24 REGISTERS		
OFFSET	BIT	CONNECT CHANNEL
40h	0	1 HI
	1	2 HI
	2	3 HI
	3	4 HI
	4	5 HI
	5	6 HI
	6	7 HI
	7	8 HI
	8	9 HI
	9	10 HI
	10	11 HI
	11	12 HI
	12	13 HI
	13	14 HI
	14	15 HI
	15	Don't Care

OFFSET	BIT	CONNECT CHANNEL
42h	0	16 HI
	1	17 HI
	2	18 HI
	3	19 HI
	4	20 HI
	5	21 HI
	6	22 HI
	7	23 HI
	8	24 HI
	9	25 HI
	10	26 HI
	11	27 HI
	12	28 HI
	13	29 HI
	14	30 HI
	15	Don't Care

OFFSET	BIT	CONNECT CHANNEL	
	+	(4 - Wire)	(2 - Wire)
44h	0	1 S+	31 HI
	1	2 S+	32 HI
	2	3 S+	33 HI
	3	4 S+	34 HI
	4	5 S+	35 HI
	5	6 S+	36 HI
	6	7 S+	37 HI
	7	8 S+	38 HI
	8	9 S+	39 HI
	9	10 S+	40 HI
	10	11 S+	41 HI
	11	12 S+	42 HI
	12	13 S+	43 HI
	13	14 S+	44 HI
	14	15 S+	45 HI
	15	Don't Care	

OFFSET	BIT	CONNECT CHANNEL	
		(4 - Wire)	(2 - Wire)
46h	0	16 S+	46 HI
	1	17 S+	47 HI
	2	18 S+	48 HI
	3	19 S+	49 HI
	4	20 S+	50 HI
	5	21 S+	51 HI
	6	22 S+	52 HI
	7	23 S+	53 HI
	8	24 S+	54 HI
	9	25 S+	55 HI
	10	26 S+	56 HI
	11	27 S+	57 HI
	12	28 S+	58 HI
	13	29 S+	59 HI
	14	30 S+	60 HI
	15	Connects S+ to Hi for 1x60 Switch Tree	

OFFSET	BIT	CONNECT CHANNEL
48h	0	1 LO
	1	2 LO
^	2	3 LO
^	3	4 LO
^	4	5 LO
^	5	6 LO
^	6	7 LO
^	7	8 LO
^	8	9 LO
^	9	10 LO
^	10	11 LO
^	11	12 LO
^	12	13 LO
^	13	14 LO
^	14	15 LO
^	15	Connects Low to Ground

OFFSET	BIT	CONNECT CHANNEL
4Ah	0	16 LO
	1	17 LO
	2	18 LO
	3	19 LO
	4	20 LO
	5	21 LO
	6	22 LO
	7	23 LO
	8	24 LO
	9	25 LO
	10	26 LO
	11	27 LO
	12	28 LO
	13	29 LO
	14	30 LO
	15	Don't Care

OFFSET	BIT	CONNECT CHANNEL	
	+	(4 - Wire)	(2 - Wire)
4Ch	0	1 S-	31 LO
	1	2 S-	32 LO
	2	3 S-	33 LO
	3	4 S-	34 LO
	4	5 S-	35 LO
	5	6 S-	36 LO
	6	7 S-	37 LO
	7	8 S-	38 LO
	8	9 S-	39 LO
	9	10 S-	40 LO
	10	11 S-	41 LO
	11	12 S-	42 LO
	12	13 S-	43 LO
	13	14 S-	44 LO
	14	15 S-	45 LO
	15	Connects S- to Ground	

OFFSET	BIT	CONNECT CHANNEL	
		(4 - Wire)	(2 - Wire)
4Eh	0	16 S-	46 L0
	1	17 S-	47 L0
^	2	18 S-	48 L0
^	3	19 S-	49 L0
^	4	20 S-	50 L0
^	5	21 S-	51 L0
^	6	22 S-	52 L0
^	7	23 S-	53 L0
^	8	24 S-	54 L0
^	9	25 S-	55 L0
^	10	26 S-	56 L0
^	11	27 S-	57 L0
^	12	28 S-	58 L0
^	13	29 S-	59 L0
^	14	30 S-	60 L0
^	15	Don't Care	

Chapter 9 Functional Description

The main circuit board assembly contains the VXI interface and the basic dual 60x1 or quad 30x1 switch Trees. The basic module is a register based VXI module. It is a register based DC device. DC stands for Dynamic Configuration, where the Resource Manager software running on the slot-0 controller/computer determines the A16 and A24 address space (refer to the VXI System Specifications). A library cell is made SC (Static Configuration) devices, by changing the address switches from FFh to a value in the range 01h-FEh. Each card in the VXI system must have its own A16 address.

MAIN BOARD

The main circuit card assembly contains the basic DMM switch tree and VXI interface. There are 120 relays which are used to configure a dual 60x1 relay tree. Relay control is through eight 16-bit registers at A24 offsets 40h to 4Eh.

U39-44	VXI interface circuits.
U37	Custom gate array which contains the VXI interface. It provides the A16, A24, and A32 bit addressing capability for the module.
U38-42	Buffers to VXI backplane.
U43, U44	Interrupt interface buffers.
U4, U14	Data buffers.
U35-36	Buffers to additional daughter boards.
U27, U13,	Address decoders to gain access to the relay registers. The relay U31-33 registers and drivers are combined into a 16 bit interface driver chip. Each device contains a 16 bit readable register and 16 open collector relay drivers with suppression diodes. There are transceivers to monitor the relay drive level. The host controller can read the contents of the program register or the logic level of the relay coil. This allows self test of the circuit to isolate between register or coil errors. The registers are U3, U12, U17, U20, U23 U26, and U30. The coil read-back is provided by U1-2, U10-11, U15-15, U18-19, U21-22, U24-25, U28-29. See schematic for pin assignments.